

ART. XIX.—*New or Little-Known Victorian Fossils in
the National Museum.*

PART III.—SOME PALAEOZOIC PTEROPODA.

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(With Plate XXXI.).

[Read 8th December, 1903].

With regard to the zoological relationship of the fossils described in this paper there is much diversity of opinion, and they are here referred to the Pteropoda with a certain amount of reserve. Nicholson has shown that by the presence of a bulbous commencement or protoconch, Tentaculites, one of the genera now described, seems to bear a decided relationship with the more recent pteropods, as *Clio*. The absence of any signs of attachment to a foreign body which might be seen on the shell, as well as its general structure, precludes one from referring the typical Tentaculites to the Tubicolar Annelides, as some have done.

Haeckel and Pelseneer, on the other hand, exclude all pre-tertiary forms from the group of the Pteropoda.

So far as the present evidence goes, the Palaeozoic examples of *Styliola* and *Tentaculites* seem to be, zoologically, closely related, the former genus being usually distinguished by the absence of annulations on the shell-surface, and it is either smooth or striated transversely. In *Tentaculites* the shell-wall is, as a rule, much thicker, although some species have quite a thin shell, as, for example, that now described under the name of *T. matlockiensis*.

The species of *Hyolithes* described in this paper belong to the genus in its restricted sense; that is to say they have the margin of the flattened side of the shell projecting considerably beyond the opposite wall.

The species described here from the Melbournian series are :—

Coleolus (?) *aciculum*, J. Hall.

Hyolithes novellus, Barrande.

„ *spryi*, sp. nov.

Conularia ornatissima, sp. nov.

From the Yeringian series—

Conularia sowerbii, Defr.

From beds probably higher in the series than the preceding—

Styliola fissurella, J. Hall, var. *multistriata*, var. nov.

Tentaculites matlockiensis, sp. nov.

On examining the above list, but excluding the *Styliola* and *Tentaculites*, which occur on a higher horizon, one is struck with the mixed character of the Silurian fauna in and around the Melbourne area.

Two of the species recorded, viz., *Hyolithes novellus* and *Coleolus* (?) *aciculum* are found elsewhere—in Bohemia and North America—in Devonian strata. Another is closely related to an Upper Ordovician form, whilst one species cannot be separated from the well-known *Conularia sowerbii*, which ranges from the top of the Ordovician (Bala beds) to the Ludlow series in Britain.

Genus *Styliola*, Lesueur.

Styliola fissurella, J. Hall, var. *multistriata*, var. nov.

(Plate XXXI., Figs. 4–6).

Description.—The shell is in the form of a slender, tapering cone, with a minute bulb at the apical end. The Victorian specimens cannot be separated specifically from Hall's *S. fissurella*,¹ but differ from it in a varietal manner, by having the surface marked with very fine and regular transverse lines of growth. The Victorian specimens average about 2.5 mm. in length. The American specimens are very variable as to ornament, but they do not show so constant a character in the lineation of the shell as do our specimens.

The shells as they occur in the shale are somewhat flattened, but, from the fact of their being so minute, they have sometimes

¹ *Tentaculites fissurella*, J. Hall. Geol. N.Y. Surv., Fourth Geol. Distr., 1843, p. 180, figs. 9 and 10; p. 222, fig. 4.

Styliola fissurella, Hall. Pal. N.Y., vol. v., pt. ii., 1879, p. 178, pl. xxxia., figs. 1-30.

escaped compression. The upper half of the shell is marked by a longitudinal median depression or fracture.

The species itself was originally recorded from the Marcellus shale, and the lower part of the Hamilton group, in the States of New York and Indiana.

Occurrence and Horizon.—This variety is found in great abundance in the bluish-grey shales of McMahon's Creek (from the Department of Mines, 3778). [1185 and 2357-60]. Also from the hard blue shales at the mouth of Starvation Creek (Department of Mines, 3368). [2361]. Both are from the Upper Yarra district. Some of the rock specimens are largely composed of these tiny shells. The latter are usually superficially stained by limonite, which causes them to stand out in contrast to the matrix of the rock. Siluro-devonian or Devonian.

Genus *Tentaculites*, Schlotheim.

Tentaculites matlockiensis, sp. nov.

(Pl. XXXI., Figs. 1, 2, 3, 5).

Description.—Shell conical, tapering, but broader at the open end than is usual in this genus. Shell substance thin, as in *Styliola*, but having distinct annuli, as in the typical forms of *Tentaculites*. Apical portion bulbous, sometimes apiculate, and occasionally with an overhanging flange. Margin of the orifice undulate, and with a vertical slit or sinus in a line with the median depression of the shell-surface. A transverse section of the shell shows it to be thinner in the neighbourhood of this depression, and the example figured (Fig. 5) has a tubular enclosure which has the appearance of a small siphuncle or ventral canal. The proximity of this tube to the wall of the shell seems, however, to be unfavourable to the idea of its relationship to the Cephalopoda, to which it might otherwise point. On the other hand examples are not unknown where a smaller shell is found enclosed in an adult specimen, and from the relative diameter of our section, the slice was apparently taken across the shell, not far from its apical end, where the enclosed shell would have a much smaller diameter.

The first third of the shell is generally smooth, afterwards becoming annulated with thin salient ridges, the intercostal

spaces being concave. The annuli cease near the marginal extremity, and the shell-surface bears numerous, vertical, superficial wrinklins pointing to an affinity with the vertically striated species of the genus.

Observations.—This species resembles *T. gracilistriatus*, J. Hall,¹ in the breadth of the distal end of the shell, but is devoid of the fine longitudinal striae seen in that species. In its neat and rather closely annulated shell-surface *T. matlockiensis* approaches *T. bellulus*, Hall²; but the latter form is always much more slender.

Occurrence and Horizon.—In the slaty shales of Mount Matlock; presented to the National Museum by Mr. N. Lepoidivil. [1131-2]. Siluro-devonian.

Genus *Coleolus*, J. Hall.

Coleolus (?) *aciculum*, J. Hall. (Plate XXXI., Fig. 7).

Coleolus aciculum, J. Hall, 1879. Pal. N.Y., vol. v., pt. ii., p. 187, pl. xxxia., figs. 11-15.

Observations.—In the series of Silurian fossils obtained during the work of the Yarra Improvements excavations, there are at least two specimens which are in all probability referable to the above species. Both specimens have lost the slender aciculate extremity, and are therefore regarded as similar to Hall's species only in a provisional sense, in the absence of complete specimens.

The angle of divergence of the lateral margins of the shell, and the faint and irregular surface markings, tend to confirm its identification with *C. aciculum*, which was described from the N. American Devonian (Genessee Slates).

Occurrence and Horizon.—Found in the blue and yellow mudstones at South Yarra, and near Prince's Bridge. Collected by Mr. F. Spry. Silurian (Melbournian). [1130 and 1174].

Genus *Hyalithes*, Eichwald.

Hyalithes novellus, Barrande. (Plate XXXI., Fig. 8.)

Hyalithes novellus, Barrande, 1867. Syst. Sil., vol. iii., p. 86, pl. xv., figs. 23-24; pl. xvi. (?), fig. 18.

¹ J. Hall, Pal. N.Y., vol. v., pt. ii., 1879, p. 173, pl. xxxi., figs. 12, 13, 14; pl. xxxia., figs. 37-47.

² *Loc. sup. cit.*, p. 169, pl. xxxi., figs. 15-18; pl. xxxia., figs. 48-51.

Observations.—Our specimens closely agree with Barrande's figured specimens. *H. novellus* is one of the few longitudinally striate forms of the genus. The angle of divergence is about 20° . Barrande's specimens were from Stage G. (Lower Devonian) of the Bohemian area.

Occurrence and Horizon.—Found in the bluish-grey mudstone out of the shaft in the tunnel of the Reservoir at Yan Yean.

Coll. Geol. Surv. of Victoria, Bb 13. Silurian (? Melbournian). [1123-4].

***Hyolithes spryi*, sp. nov.** (Plate XXXI., Fig. 9).

Specific Characters.—Shell conical, straight, or with a slight curvature to one side, extremely sharply pointed. Lateral margins acute, having an angle of divergence of about 21° . Surface of shell marked with fine, transverse and arched growth lines, and occasional broader and slightly convex bands. Operculum sub-elliptical, ventral edge regularly curved. The umbo is situated at $\frac{5}{8}$ of the width from the base. There is a distinct fold proceeding from either side of the umbo to the lateral margins. Surface of operculum concentrically and finely striate. Length of figured shell, 23 mm.; breadth at aperture, 9 mm.

Observations.—The form of the shell in this species is somewhat like that of *H. elegans*, Barrande, an Upper Ordovician form.¹ It differs, however, in being straighter, in having a less dilated aperture, and in the details of its ornament; there being no longitudinal markings on the surface of *H. spryi*.

Occurrence and Horizon.—Found in the dark argillaceous rock of Domain-road, South Yarra. [1127-9; 1121-2]. Collected and presented by Mr. F. Spry. Also in the bluish mudstone, near the Botanical Bridge, South Yarra (Yarra improvements). [1120]. Collected by Mr. F. Spry. Silurian (Melbournian).

Genus ***Conularia***, Miller.

***Conularia sowerbii*, Defrance.** (Plate XXXI.,
Figs. 8, 10, 11, 12).

Conularia sowerbii, Defrance, 1825. De Blainville, *Man. Malac.*, p. 378; atlas, pl. xiv., fig. 2.

¹ *Syst. Sil.*, 1867, vol. iii., p. 81, pl. xi., figs. 14-25.

C. sowerbii, Defr., Salter, 1859. In Murchison's *Siluria*, p. 550, pl. xxv., fig. 10.

C. sowerbii, Defr., de Koninck, 1898. *Mem. Geol. Surv., N.S.W.*, Pal. No. 6., "Pal. Foss., N.S.W." p. 34.

Observations.—This is a comparatively broad form of *Conularia*, well-known from Upper Ordovician to Silurian strata in Europe and elsewhere. It has also been recorded with reservation by de Koninck from Rock Flat Creek, New South Wales (Silurian).

Occurrence and Horizon.—In the hard grey mudstone at the junction of the Woori Yallock and the Yarra: coll. *Geol. Surv. Vict.*, B 23 [1125]. Also in the ochreous mudstone of Wilson's, N. of Lilydale. [2362-3]: presented by Mr. J. T. Jutson. Silurian (Yeringian, and perhaps younger).

***Conularia ornatissima*, sp. nov.** (Pl. XXXI. Figs. 13, 14).

Specific Characters.—Shell broadly conical, with blunt and rounded apex; angle of divergence about 50°. Transverse striations fine, and strongly arched; at 10 mm. from the apex, 0.2 mm. apart. The intercostal striae fine, and traversing the transverse ridges. Length of figured specimen 18 mm.; but indications on matrix of one example point to its having had a much greater length.

Observations.—This *Conularia* belongs to the type of *C. nobilis*, Barrande¹ from the Upper Ordovician of Bohemia (Stage D). In our species, however, the vertical ornament is not so pronounced, and therefore it does not appear as though the shell were continuously striated from apex to mouth. The interspaces between the vertical costulae are wider than in *C. nobilis*.

Occurrence and Horizon.—In the blue and yellow mudstones at South Yarra (Yarra Improvements). [1186, 2361]. Collected by Mr. F. Spry. Silurian (Melbournian).

CORRIGENDA TO PART II., Vol. XVI., Pt. I., 1903.

P. 65, line 7 from bottom, for [59] read [597].

P. 69, line 7 from bottom, after figs. 6, 7, insert pl. xii., figs. 1-9.

¹ *Syst. Sil.*, 1867, vol. iii., p. 46, pl. xiv., figs. 7, 8.

P. 60, line 3 from bottom, after fig. 5, insert pl. xii., fig. 2.

P. 72, line 6 from bottom, for [678-81] read [678-80].

P. 79, line 15 from top, for tribolite read trilobite.

P. 79, line 16 from top, for faces read facies.

EXPLANATION OF PLATE XXXI.

- Fig. 1.—*Tentaculites matlockiensis*, sp. nov. [1131]. $\times 14$.
- 2.—*T. matlockiensis*, sp. nov. Apical portion with protoconch, seen in section. $\times 56$.
- 3.—*T. matlockiensis*, sp. nov. Apical portion of another example, with a differently shaped protoconch, from a section. $\times 56$.
- 4.—*Styliola fissurella*, Hall, *var. multistriata*, var. nov. [2357]. $\times 14$.
- 5.—*Tentaculites matlockiensis*, sp. nov. A transverse section taken in the earliest third of the shell. Showing a tubular enclosure. $\times 56$.
- 6.—A piece of shale from McMahon's Creek, showing the relative abundance of the shells. Natural size.
- 7.—*Coleolus* (?) *aciculum*, Hall. [1130]. Natural size.
- 8.—*Hyalolithes novellus*, Barrande. [1124]. $\times 2$.
- 9.—*H. spryi*, sp. nov. With operculum *in situ*. [1127]. $\times 2$.
- 10.—*Conularia sowerbii*, Defrance. [1125]. Natural size.
- 11.—*C. sowerbii*, Defrance. Ornament magnified, and partially restored. $\times 4$.
- 12.—*C. sowerbii*, Defrance. Ornament from another, better preserved specimen. [2362]. $\times 4$.
- 13.—*C. ornatissima*, sp. nov. [1186]. Natural size.
- 14.—*C. ornatissima*, sp. nov. Ornament magnified. $\times 10$.